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THE
VETERINARY RECORD.

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Yorkshire V.M.S.

A MEETING wil be held at the Hotel Metropole, Leeds, on Friday, November 12th at 3.30 p.m. prompt. The President Mr. S. E. Sampson, Esq., Sheffield, in the chair.

Business: Routine. Election of Officers and Council, 1920-21. Election of Representatives on the Council of the National Veterinary Medical Association.

Demonstration: "Passing the Stomach Tube" by W. W. Lang, Brigg. Report on the Sanitary Congress, 1920. Interesting cases.

At the conclusion of the meeting those present will be entertained to tea on the invitation of the Leeds members of the Society.

J. CLARKSON, Hon. Sec.

Midland Counties' V.M.A.

A MEETING will be held at the Grand Hotel, Leicester, on Thursday, November 11th, at two p.m. The President, R. R. H. Over, Esq., will occupy the chair.

Agenda:—Routine business. Prof. Gaiger, Royal Veterinary College, Glasgow, will read a paper on "The Principles of Serum and Vaccine Therapy."

The President will be glad if Members will bring interesting post-mortem specimens.

Tea at the Grand Hotel at five o'clock.

Camden House, West Bromwich. H. J. DAWES, Hon. Sec.

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THE VETERINARY RECORD

A Weekly Journal for the Profession.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

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NOMENCLATURE.

One of the modern needs of veterinary science in England is a comprehensive revision of our nomenclature. This generation is not likely to advance very far with it, for progress largely depends not so much upon the veterinary profession as upon specialists in various departments of biology. Improvement is more possible as regards everyday terms of the clinician, and we might make a start with these.

Everyone knows the woeful confusion that has always marked the nomenclature of veterinary anatomy. Few men are able to even attempt reform here, and many otherwise good books exist as obstacles to it, so improvement is likely to be slow. Bacteriology, protozoology, and parasitology also present not a little confusion in their nomenclature. Here various reasons, including uncertainties of classification, render reform difficult. In all such subjects as these, our nomenclature will probably remain unsatisfacfory for a long time.

A speedy improvement of our clinical nomenclature seems more feasible, and the need for it is equally great. Two glaring examples may illustrate that need. It is no credit to us that it should be impossible to know what a veterinary surgeon really means by the two terms "quittor" and "ringbone."

Yet it is the fact. Some practitioners class every sinuous wound of the coronet as "quittor;" others limit the term to cases in which a lateral cartilage is involved. Similarly, some apply the term "ringbone" to almost any exostosis below the fetlock, while others confine it to exostoses in the neighbourhood of an interphalageal joint, accompanied by arthritis. In both cases, one man restricts the term to a condition which is always very serious, while the other enlarges it to include other conditions, some of which are much less important. This certainly needs alteration.

Here, as in so many other directions, there is an opportunity for the "National." A well-chosen committee, sitting under the auspices of the "National," might do a great deal for our nomenclature. It could effect nothing with regard to such subjects as parasitology, and would be ill-advised to try. But it might accomplish a great improvement in the terminology of everyday veterinary practice; and that, after all, is the major consideration for most of us.

NOTE ON A CASE OF DEATH UNDER CHLOROFORM.

H. A. REID, F.R.C.V.S., Wellington, N.Z.

Subject, a spaniel dog suffering from hæmorrhage from the left hind limb, which appeared to involve the anterior tibial artery. The artery had been cut by a piece of glass penetrating the leg while the dog was engaged rooting about on a rubbish heap. The glass had been removed but the bleeding from the wound persisted.

The owner, a medical doctor, with the assistance of a friend, also a doctor, had attempted unsuccessfully to locate and ligature the bleeding vessel.

Cotton wool pads had been placed over the wound and tightly bandaged to produce compression, a tight bandage had also been applied above the seat of injury. By these means the hæmorrhage had been partially arrested. On the third day following the accident, the owner removed these dressings in order to give the wound further attention. The bleeding recommenced as badly as ever, and the dog was hurriedly brought to me for treatment.

Examination showed a deep penetrating wound situated about the lower third of the tibia. The tissues were swollen and dirty, and the surroundings encumbered by the animal's woolly, blood stained coat. Exploration with a view to securing the injured vessel caused great pain, and before proceeding further, I decided to administer a general anæsthetic.

The dog was chloroformed by an assistant of considerable experience, about two drams of chloroform were given by the open method, upon cotton wool covered with a light towel. In a few seconds I was surprised to find that the bleeding had ceased, and still more so to see rapid and diminishing respirations. The anæsthetic was at once removed, but the dog's pulse was running down and breathing becoming shallower. Artificial respiration and the exhibition of ammonia failed to resuscitate him.

Post-mortem examination disclosed an enlarged heart, the enlargement being principally due to dilatation of the right auricle.

On opening the right side of the heart, the auricular walls were seen to be very thin and flabby. The tricuspid valves were thickened, and opaque, and had become cartilaginous along their outer edge. This appearance of the valves was very striking and remarkable.

The changes in the valves had led to insufficiency, with consequent regurgitation of the blood into the auricle, followed by extreme dilatation.

The owner of the dog afterwards informed me that during the life of the animal, he had noticed an irregular action of the heart. The case seems instructive as illustrating the advisability, when possible, to ascertain the state of the heart and vessels before proceeding to administer a general anæsthetic. It also satisfactorily demonstrates the reason for the patient's sudden collapse in the early stages of narcosis.

HEEL BUG: HEEL MICROBE.

I was somewhat surprised that neither of our editors apparently took any steps to obtain first-hand a description of the prevalent disease which was written about so much in *The Sportsman*, and which rendered *hors de combat* many of the cracks. Evidently two separate diseases were hopelessly mixed up, and a third, bacillary necrosis, was even mentioned.

Heel bug, or harvester, *Leptus Autumnalis*, is an annual source of trouble to thoroughbreds in training. These red insects cause, by their biting, irritation and a lot of pimples on the legs. When the heels are much attacked the skin becomes inflamed, and cracked heels are often found. The body is not affected. On rare occasions a persistent scaly patch forms on the coronet or fetlock, with hypertrophy of the papillæ of the skin. These gradually extend in circumference, and are difficult to heal.

I have found sponging the legs before exercise, with a mixture of twowi neglassfuls each of Jeyes' fluid and paraffin in a gallon of water, to act as a useful preventative. On a white leg, these little red insects can often be seen. One common place to find them is round the anus of a rabbit, caught on the Downs in harvest time. They give the anus an appearance of having been peppered with cayenne.

Horse Pox.

The late outbreak we have had to contend with showed quite different lesions, and I found the virulence varied in different stables, also in the same stable towards the end of the outbreak. The first symptoms were:—slight indisposition, scarcely noticeable, and cough for two days—latter not always present. In the heels, on the coronets, and fetlocks—or all three, definite vesicles formed, from the diameter of a pencil to that of a threepenny piece; these burst and discharged a lot of yellow serum, which frequently ran down the hoof. In the heels they frequently coalesced in a very short time, and gave rise to a cracked heel. On the other parts, as well as on parts of the heel, they formed, in two or three days, a dry adhesive scab, often difficult to remove, and easily re-formed.

Higher up the legs often a large numb er formed, these were usually much smaller and did not discharge much. The body showed lesions in many cases. Two showed typical variola around the mouth, and one under the tail, and on the perineum.

All four legs were usually affected, but not always in each heel. Three showed large sweating patches which ran profusely and appeared afterwards as having been severely blistered.

My first two cases showed body lesions only at first. The next case showed on the legs and heels, and I immediately gave my opinion that it was Equine Variola.

Individual cases lasted 10 to 14 days; complications longer. One mare broke out with an abscess in the groin. The later cases were milder, and did not discharge much serum.

Trainers have been inundated with vaccines, applied as a paste to the part.

Wm. T. D. Broad, M.R.C.V.S.

Marlborough, Wilts.

The Investigation and Classification of Symptoms of Diseases in Animals.

Sir James McKenzie, M.D., F.R.S., is devoting his time to arranging for medical practitioners to collect and classify symptoms of disease in the human subject. His lead might be followed by the veterinary profession by veterinary practitioners carrying out the same in regard to animals. This is a most desirable work, and the members of the veterinary profession would derive a great and lasting benefit in its adoption. Might I humbly suggest that the various branches of the National Veterinary Association should start such a scheme amongst their members, and have discussions and debates on different diseases from time to time. It lies with the ordinary veterinary practitioner to carry out this work, as he is best able and has the best opportunities of observing the first symptoms of disease in animals. I hope to see such a scheme started, along with a new nomenclature for animal diseases.

I sincerely hope the veterinary colleges and veterinary professors will place their appliances at the disposal of members who are doing such professional work. They also will reap benefits in increased public support and recognition.

J. Donaldson Pottie, M.R.C,V.S.

CONFERENCE OF VETERINARY INSPECTORS.

Royal Sanitary Institute's Congress.

"The Need of Uniformity in Food Inspection," J. A. Dixon, M.R.C.V.S., Veterinary Inspector, Leeds. (*Ante* p. 147).

Discussion.

Prof. Wooldridge said that he agreed with Mr. Dixon that the co-ordination of the inspection of meat and other foods throughout the country should be carried out by the Ministry of Health, the food section of which should contain a veterinary expert.

Mr. Miller spoke from the point of view of the county rather than borough areas. His county was one of the most extensive in England, and was split up into a number of small local sanitary districts. It contained several private slaughter-houses, which undoubtedly found a convenient first door through which doubtful meat could begin to find its way into the domestic kitchen. Farmers ought to realise their position as trustees to the public, but as long as some of them did not, private slaughter-houses could be, and were, improperly used, and the time had come when they would have to be swept away, or made subject to adequate

official inspection. In many rural areas where everyone was everyone else's neighbour, the Local Sanitary Inspector, however able and well intentioned, would find it next door to impossible to enforce absolute honesty of dealing. The speaker therefore urged that the proper course was for the County Council to appoint a whole-time duly qualified Veterinary Inspector who should enforce a rigid inspection of private slaughter-houses until abolished, and of public abattoirs when set up in their place. Economists would no doubt cry out against the cost, whether of compensation or of the appointment of yet more officials. Nevertheless the Ministry of Health should be urged to bring about the early abolition of all private slaughter-houses as they exist to-day, and the establishment in the country of public abattoirs subject to County Council (as distinguished from Local Sanitary) inspection.

Dr. HAROLD KERR, M.O.H., Newcastle-upon-Tyne, stated that it was rather surprising that no reference had beed made by any previous speaker to the suspended Milk and Dairies Act, with its wide powers for the inspection and control of products and elimination of tuberculosis.

If tuberculosis is to be eliminated from the herds and from the meat and milk it will only be by placing the execution of the necessary powers in the hands of specially trained and experienced *whole-time* veterinary officers. It is no secret that one of the chief reasons for the delay in providing local authorities with the necessary powers is the great shortage of good officers of this description. The veterinary profession to-day is in the same position as the medical profession was until recently, and indeed is to a considerable extent still—while its individuals are well trained in clinical and curative work, they have practically no instruction in the preventive side, and consequently have little or no interest in that ; and until this vital portion of the machinery is available any attempt to tackle the big question referred to will continne to result in a fiasco, as that which characterised the administration of the Tuberculosis Order of 1913.

No Health Department of any importance is complete without its veterinary officer, who, like the Tuberculosis Medical Officer, the Venereal Diseases Medical Officer, and the Maternity and Child Welfare Medical Officer, should be allowed a high degree of personal responsibility and discretion in the technical side of his work, but should be under the general administrative control of the Medical Officer of Health, whose function is becoming more and more that of director of policy and co-ordinator of sections in the Health Department, and less and less that of an Executive Officer. There is an even wider scope for the capable veterinary surgeon trained in State Service, for who has a better opportunity than he of obtaining experience to fit him to advise in the distribution of food stuffs for the avoidance of waste ? I need only refer to the appalling losses of meat, condemned during our terrible shortage, on account of decomposition resulting from ignorance, carelessness, or mismanagement. In Newcastle, meat condemned for other causes than tuberculosis amounted last year to no less than 17 times as much in any normal pre-war year.

Recognition of the veterinary officer's special suitability for this work has been shown recently by the appointment of the Newcastle Veterinary Officer, Mr. Thomas Parker, F.R.C.V.S., upon a Parliamentary Committee for a consideration of food distribution.

Resolution proposed by Mr. Deputy Neal, Corporation of London, seconded by Mr. Miller, Devon County Council—"That in future no official shonld be appointed to a responsible position in connection with the inspection of meat and food unless he is adequately qualified as regards professional education and experience, and that the Ministry of Health should draw up a list of qualifications which would be acceptable."

Mr. G. P. MALE regretted he was unable to support Mr. Deputy Neal's resolution in its present form as it meant that not only veterinary surgeons acting as food inspectors but also medical men would have to pass a qualifying examination before they could take up their duties, and he did not think that was necessary. Veterinary surgeons had special training in this work both during their college career and afterwards by taking post-graduate courses.

The veterinarian chiefly dealt with foods of animal origin, *e.g.*, meat and milk, in which subject he claimed he had a special knowledge. He disagreed entirely with Dr. Kerr when he said the Milk Bill was being held up owing to the dearth of veterinary surgeons to carry it out.

The Tuberculosis Order had been administered with great efficiency as far as the veterinary profession was concerned, and had it not been discontinued during the war there would have been very few cows in this country giving tubercle bacilli in the milk. The part-time inspector had the good will and confidence of the dairyman.

THE METHODS OF SPREAD AND CONTROL OF FOOT AND MOUTH DISEASE.

By D. A. E. CABOT, M.R.C.V.S.

Foot and Mouth Disease was first recognised in this country about eighty years ago, at the time when the importation of animals was prohibited, but we have no knowledge as to how long it had then been in existence, or by what means it had been introduced. At a time when fatal contagious diseases, since eradicated, were prevalent, a condition like F. and M., though contagious, but in comparison of less economic importance, would receive little attention from the authorities and the community. The successful campaign against cattle-plague checked the spread of F. and M. and indicated a a means for its abatement ; and prompted by public opinion the Privy Council took energetic steps against it under the Contagious Diseases (Animals) Act of 1878, with the result that in two years the disease had prac-been overcome. In the winter of 1880, several cargoes of affected animals were imported from France which it is believed were responsible for several outbreaks near London, and as a result of affected animals passing through important markets, the disease spread in a few months practically over the whole of the country. Six years elapsed before it was eventually eradicated.

Since that time it has appeared on many occasions at intervals, the longest of which have been 5 years on three occasions, but unfortunately, during the last ten years the intervals have become reduced to months.

In 1892 the importation of animals from all European Countries was prohibited, but the hope that this would keep the country free from the disease was not realised, and in 1908 the importation of fodder was also stopped, following upon an outbreak in Scotland which was associated with the purchase of hay from the Continent. These measures have not been sufficient to protect our live stock from recurrent invasions of virus, though they were reinforced in 1912 by the embargo on tongues of Russian origin, in consequence of the discovery of consignments of tongues showing lesions of the disease.

During the past ten years there have probably been not less than 57 separate invasions of virus, and though the measures now in force have not failed, inasmuch as they aimed at the prevention of introduction of virus by certain means, and to that extent have probably been successful, the fact that infection has so frequently been imported by other means shows how serious and urgent is the problem with which we are confronted.

Etiology.—The disease is caused by one of the group of ultra-visible organisms, and in an early stage of an

attack is septicaemic—that is to say, the virus is not confined to the lesions, as is sometimes popularly supposed, but is carried throughout the body in the blood stream. This is accompanied by a rise in the temperature, and the animal is capable of infecting others by means of the natural discharges, the infectivity of which is demonstrated by the case of very young animals which becoming affected by means of milk or the contents of a vesicle on a teat, die of gastro-enteritis, without developing any vesicular lesions, but are, nevertheless, able to disseminate the disease. The length of the period of this stage is usually from 6 to 24 hours, but exceptionally may be as long as 36 hours. It is followed by the appearance of the lesions—the vesicles, in the mouth and on the muzzle, the feet, and sometimes on the teats. It is, however, in the clear watery content of the vesicles, which burst about 24 hours after their formation, that the virus is most abundant, and it is at the time of their rupture, that the animal, salivating copiously, soiling fodder and litter and premises, is most highly infectious.

Thereafter, in an uncomplicated case the process of healing takes place, and with certain exceptions the animal will cease to infect after the lapse of probably 2 or 3 weeks ; it is said that the saliva is no longer infective ten days after the vesicles have burst (1) though an animal may carry infection, in its coat, for instance, for some time longer, and as a mechanical agent will remain infective until the virus dies or is shed.

There are certain contagious diseases in which the victims in all appearances, have made a perfect recovery continue to be infective to others. To some extent this happens in F. and M., and the carriers are infectious, at any rate intermittently, for several months, though without close examination they are undetectable, not as "carriers," but as animals which have recovered from an attack. Such cases have been known in this country, (2) but the opportunities of meeting them are reduced to a minimum by application of stamping out measures, which leaves no survivors. The great importance of this factor will be readily appreciated, for such animals will pass through markets without comment—there is nothing in their appearance which could lead the most vigilant observer to suspect them as disseminators of F. and M.

It is difficult to gauge the proportion of recovered animals which remain "carriers," or the length of time that such carriers remain infective. Some information on these points may be gathered by referring to the official statistics of years when the disease was prevalent. In 1883 more than a quarter of a million animals were returned as affected ; in 1884 the number was 28,000 ; in 1885, 410 ; in 1886, 10, and no outbreak was recorded in the following five years. So rapid a fall in the prevalence of the disease, terminating in its disappearance, suggests that recovered animals seldom remain infective, or that they lose their infectivity before long.

Of course, for many months after an attack a carrier may live in contact only with animals which, having passed through an attack, have developed an immunity against the disease, so that the danger to which they are exposed does not become manifest ; but a large number of susceptible animals must have been exposed to contact with the considerable number of animals which survived, yet the disease was extinguished in spite of the fact that three years earlier there was a quarter-of-a-million affected animals in the country.

Means of Spread.

The belief that a specific contagious disease could arise spontaneously has been discredited for a long time, therefore, if an outbreak which occurs in this country is to be credited with a local origin, it could only arise from a previous outbreak on the same land or the same premises. Experience shows that the land may be safely re-stocked six weeks after diseased animals have been removed from it. The disinfection which is carried out, though serving a useful purpose, cannot be regarded as thorough, when, for instance, its application is to a grass field, so that any virus sthat escapes death by chemical means is killed by exposure to the elements, or is unable to live for that period outside the animal body. In such circumstances the comparatively few outbreaks of to-day cannot be attributed to those of thirty years ago, even if it could be shown in all cases that disease had existed on the same premises many years ago.

If we admit—and it is generally admitted—that outbreaks are not of local or English origin, what is the source from which they arise, and how is the virus introduced into this country ?

Much thought has been given to the matter, and opinion has been modified from time to time, as the circumstances attending subsequent outbreaks frequently differed materially from those which surrounded antecedent ones. The disease is usually apidemic in parts of the Continent, and if, as many believe, the virus is unable to lead a prolonged existence outside the animal body in natural circumstances, the Continent appears to be the most likely source from which outbreaks in this country originate ; it is the nearest source, and from it infection can be disseminated probably with more success than from remote sources which require longer periods for the transit of virus media to this country. Consequently it is reasonable to regard the Continental factor as of first importance in discussing the means by which the virus invasions aake place.

In this connection one of the outstanding features of 1919, was the great influx of men from the Continent consequent upon Army demobilisation. The occurrence of several outbreaks of F. and M. in the vicinity of camps in this country seemed to indicate that the virus was being introduced from infected farms in France, or Belgium, or Germany, by returning troops or stores. In other outbreaks men who had been demobilised for various periods were employed on the farms, and this seemed to corroborate the previous evidence ; but there were other cases which occurred many miles from a camp, and in which men who had served on the Continent were not employed. Further, the greater part of the demobilisation took place during the Spring and the Summer, and although there were a certain number of outbreaks during that period, it was not until October and the following months that they became so alarmingly prevalent.

In December, 1919, some animals grazing on land in military occupation, developed F. and M., and it was natural at first to associate the outbreak with the presence of troops ; but practically at the same time, another outbreak occurred on a farm eight miles away, and in the latter, demobilised men were not employed. There was no connection between these outbreaks, the simultaneous occurrence of which was either a coincidence or the result of dissemination from a common source, but if the latter were the case, it was not by means of military movements.

Besides, the problem is not one which is confined to the period of the War and of demobilisation, so that whilst the contention that the virus has been brought to this country by returning troops may be correct as regards some of the outbreaks, there is no doubt that in the majority the medium must be looked for in another direction.

It has been observed that the strings of saliva hanging from the mouths of affected animals standing in the open, have been carried away by a high wind, and this has been thought to indicate that the virus is air-borne. How long the virus floating in the air can survive the variations in temperature, exposure to sunlight, and,

above all, to dessication, is problematical, but the theory has received a certain amount of Continental support, and deserves considerable attention.

It might be argued that if the virus is air-borne, a wind blowing from the same direction for several days should usually set up a series or a group of outbreaks in its train, or that scattered outbreaks should arise when the direction of the wind is variable, whereas it is not uncommon for a singie outbreak only to occur. It is conceivable, however, that a quantity of virus, falling on sterile ground is lost and dies, and that only a minimum finds a susceptible animal body in which it multiplies.

By whatever medium the virus is brought here, it is probable that the greater part of it dies because it does not fall in a suitable environment. Nevertheless, there are numerous examples in recent years of the occurrence of a single outbreak, and in many of these cases there has been no other centre of infection in the country, or if so, it has been at a considerable distance ; and there have occurred many groups of outbreaks in which each outbreak originated from a local parent case, and each was attributable to established contact of healthy animals with either diseased animals or infected persons.

Assuming that the disease is carried by air, it is remarkable, looking back over a period of years how little it is disseminated by obscure means, such as this, after it has become established here. In some outbreaks, when conducting post-mortem examinations of slaughtered animals, it is possible to indicate that one of these has been affected for several days longer than any of the others, and it is this type of outbreak which is considered by some to be an example of air-borne infection, one animal only acquiring infection which was presumably insufficiently distributed to infect several.

An interesting series of outbreaks occurred in the early part of this year. Nine days after confirmation of disease, an outbreak was discovered about four miles to the east of the first, and two days later another was declared about four miles from the second, in the same direction, 14 animals being affected within 24 hours of onset of first symptoms ; on the following day still another was confirmed, about one mile from the previous one, also in the same direction ; disease thus having spread about nine miles from the first case. These outbreaks were not due to movement of diseased animals, or of infected persons, or of material from infected premises—so far as could be established, but they did happen in the direction in which the wind was blowing from the first infected farm, and seem to present an excellent example of distribuion of virus by air or presumably arising from the first case, and not passing on step by step from one outbreak to the next.

The evidence is divested of much of its importance when it is considered that the animals in the first case were housed and that that outbreak was promptly dealt with, and further that 14 animals appeared to contract the disease about the same time in the third case. In spite of the lapse of nine days between the first and the second, these four outbreaks may have arisen from a common source.

The incidence of the disease in any particular part of the Continent—for instance, that contiguous to the English Channel, is not material to the discussion of this means of spread, seeing that outbreaks arise as far north as Cumberland and Northumberland, nearly 400 miles from the nearest point on the Continent ; so that if this theory were accepted, the risk of invasion to which we are exposed must be practically constant, at any rate, as regards our southern counties, and it is difficult to explain our periods of immunity, several of which have been as long as five years.

It would seem that animals most exposed to this method of dissemination of virus are those in the vicinity of infected places, especially where the affected animals are not housed ; if this be admitted, then it must be concluded that in view of the general experience—the series quoted earlier is exceptional—the introduction of infection into this country, rarely if ever, takes place by air.

It has been suggested that infection might be brought to this country by birds coming from abroad. Many of the migrants arrive here in March and April, some from the Continent, some from beyond, sometimes resting on their way. Others arrive at irregular times during the winter months, their departure from their summer haunts being regulated by the advent of severe weather ; most of these spend their breeding season in Scandinavia, Siberia, or Arctic regions, where the disease is practically non-existent.

As the disease occurs here at all times of the year, its appearance does not coincide with the arrival of regular migrants ; but there are also irregular visitors such as gulls and cormorants, which frequently spend a few days on land, and also visit these shores, coming from the Continental coast. These birds, feeding on garbage, may ingest strips of mucus membrane which are shed on the bursting of vesicles, and it has been thought that they might subsequently excrete virus. The comparative frequency of outbreaks in our south-eastern counties may lend a measure of support to the suggestion that it is these which introduce infection, but they are not likely to be responsible for outbreaks which originate among animals confined in crew yards, or in a pig-sty. The part, if any, played by birds generally in the dissemination of disease is likely to be very small.

The possibility of an outbreak being set up by the importation of hay, straw, or other material of foreign origin used for packing is one which is always thoroughly probed, but I am not aware of a single instance in recent years in which such material has been brought to farms just before an outbreak, and there is no doubt that, though such material is a potential factor in the spread of the disease, it is not by this means that the virus is usually brought here.

Reference has already been made to the fact that in its earlier stages the disease appears in one of two forms ; either it affects one or two animals from which it spreads to contacts, or it affects several simultaneously. Where a number of animals are attacked at the same time, one must consider more particularly the means which lend themselves as a vehicle for the carriage of virus in comparative abundance, and the most obvious is food or litter, of which hay and straw can be eliminated, as neither is imported from infected countries ; leaving artificial feeding stuffs as the only material which requires consideration. The raw article used in their manufacture is drawn from many parts of the world some of which are never free from F. and M. ; but there is the apparent further risk, that as much of the raw material is imported by Continental countries and the manufactured feeding stuffs are re-exported to England. The raw material is imported essentially for the extraction of oil, the residue, used as feeding stuffs for animals being a bye-product. The oil is used in the preparation of food or in the manufacture of soap, or for industrial purposes, and is extracted either by heat or by cold pressure. (5).

Copra, cottonseed, palm-nut capsules and palm-nut kernels are treated by heat, the temperature being maintained at 170-180 F. by steam, whilst oil is cold drawn from cocoa nibs, coker nuts, and pea nuts. In cases where oil is extracted by pressure the mass is subsequently treated by solvents, as benzol, carbon, bisulphide, or petroleum ether, to remove some of the residual oil.

In the one case the temperature is sufficient to kill the virus of F. and M. and in the other it probably could not withstand the effects of the solvent. There still re-

mains one possible medium of infection ; if the process of manufacture removes all risk of virus being brought here by feeding stuffs, it is possible that contaminated sacks used for their conveyance when manufactured abroad may infect the cake put in them. We have no evidence on this point except of a negative kind, for as attempts to link up two or more original outbreaks through feeding cake have failed, so there has been no success in linking up any by means of sacks.

On the other hand there is the very definite evidence that occasionally outbreaks occur in which artificial feeding stuffs have not been used. The insignificance attached to cake as a means of spreading F. and M., is indicated by the experience of Scotland, where feeding stuffs are largely used, and which has enjoyed a peculiar immunity from disease for many years.

An interesting example of the insidious and unsuspected entry of virus is furnished by the experience of the United States of America, in 1908 (4). Several outbreaks were traced to a number of calves which had been used for the production of Small Pox vaccine, and subsequently dispersed, evidence of F. and M. coming to light about two days after the animals had left the manufacturer's premises. Enquiry showed that these calves had been inoculated with lymph imported from abroad a short time previously, and by experiment it was demonstrated that the lymph was contaminated with the virus of F. and M. The history of the outbreaks which occurred in the U.S.A. in 1902 and 1903 indicated that these also had a similar origin. The precautions taken in this country preclude the possibility of the disease being spread in this manner.

I have discussed the questions which are of widest application and most commonly referred to in connection with the introduction of disease, but enquiries in specific cases cover a larger range, including the movement of persons, of visitors to the farms, receipt of goods from abroad or of possible recent foreign origin, any peculiarity of the owners' occupation or mode of farming, etc., but the results invariably throw no light on the subject. Whether more than one mode of entry plays a part in the introdution of infection or not it is, therefore, impossible to say, but it would appear strange that if there are several, all should have escaped notice, so far. The difficulty in attributing a probable means of entry of virus in the repeated invasions to which our live-stock is subjected, lies in the fact that it seems impossible to detect a factor which is common to all. It may be thought that an extensive outbreak results in an aftermath of cases which are widely disseminated by untraceable means, as for instance, the numerous outbreaks which occurred in the latter part of 1912, following upon the widespread outbreaks which earlier arose from a known centre, and that many of the outbreaks subsequent to October last were due to the extensive outbreak in the Isle of Wight during that month. That this is not the case is indicated by the fact that the Bath group of outbreaks of 1916—a larger group than that in the Isle of Wight last year—was not succeeded by the reappearance of the disease in various parts of the country.

It is probable that though the disease may exist in one part of the country, new centres arising in other parts are due to separate invasions by the virus, and are not secondary to the pre-existing outbreaks, though, even if, contrary to belief, a number of centres arise from English sources, the spread of infection from abroad still remains unexplained in the majority of our outbreaks, and we are faced with the additional problem of accounting for the means by which virus becomes scattered over considerable distances in this country.

Local Spread.

Locally, the principle factor in the spread of disease is undoubtedly contact of diseased animals with healthy ones, its dissemination depending upon the movements of the animals involved ; it may remain localised in a herd, or in a village, or new centres may be set up by distribution of animals by road or rail, or through markets.

The disease is easily and frequently carried to healthy animals by persons who have tended or handled affected ones. A farm hand may take it from one part of the farm to another ; a butcher who is summoned to slaughter an affected pig may carry infection to another farm which he visits to kill another ; a neighbour who is called in to see an ailing bullock may be responsible for an outbreak on his own premises.

Affected animals will contaminate fodder or straw to which they have access, and the distribution of these materials may convey the disease to other animals. Secondary outbreaks spread in this way are occasionally encountered. Cattle in fields down stream are always threatened to some extent by the occurrence of an outbreak in water meadows or on land bounded by ditches where the affected animals drink or stand in the stream. The danger is probably minimised by a swift current, or stagnation of water ; only the cattle on the opposite side of the ditch being threatened in the latter case. Experience indicates that disease is not spread for considerable distances by means of streams, though they appear to play a part in local dissemination.

The virus may be excreted in the milk of affected cows. Rupture of a vesicle on a teat will contaminate the milk, and where it is disposed of to a factory, as for instance, a butter making factory, there is a grave risk of the disease being spread to farms where the separated milk is taken for calf rearing or pig feeding ; the opportunities for infecting a considerable quantity of separated milk are obvious, so that in a few days the disease could be widely distributed by this means.

Control.

General Measures.—In order to prevent as far as possible the introduction of disease from abroad, suitable measures must be adopted to prevent or control the importation of all known media of infection from countries where the disease exists ; such measures must prohibit the importation of hay and straw except for industrial purposes ; the exclusion of meat known to be affected must be continued ; the importation of animals from countries believed to be free from the disease should be subject to quarantine before release, as there is always a possibility of undisclosed centres existing in the country of origin. Surplus litter and fodder carried for the use of the animals whilst on board should not be be landed, as some of it may have become contaminated before being shipped ; and for the same reason the duration of the journey should not count as part of the period of quarantine, the time of latest possible exposure to infection being calculated as from the time of landing.

Economic conditions have changed so much in recent years that it is doubtful whether the importation of live animals from abroad will be resumed for many years ; whilst the development of the refrigerated meat industry will probably render it permanently unprofitable. If, however, the importation of cattle were deemed necessary it could be permitted only on the condition that animals be slaughtered at the port of entry when they come from countries where the disease is epidemic, or occurs at intervals. The discovery of a diseased cargo, or an outbreak among animals awaiting slaughter, would not involve animals in this country, as the management and supervision of the lairs could, as in the past, prevent the escape of infection.

Local Control.—It is essential to act promptly in order to cope successfully with an outbreak. So long as stamping-out measures continue in force, the Central Authority is always prepared to act at once, but it must

rely on local opinion for information as to the existence of suspected cases. The Local Authorities must report by order, and can be depended upon to do so ; the same obligation rests upon the owner, though it not infrequently happens that he does not suspect F. and M. but attributes the condition to various other causes ; and, attempting to cure them by active means, or perhaps contenting himself by removing the animals to fresh pastures, exposes other animals to infection ; whilst his neighbours may unwittingly expose theirs. Alarmed, perhaps, at the spread of disease, particularly when dairy cows are involved and the flow of milk almost ceases, he may consult his veterinary surgeon. In the past, the Ministry of Agriculture has received invaluable help from practitioners who have promptly notified their suspicions, though there have been cases where avoidable delay has resulted in spread of the disease which it is believed would have been prevented or reduced by earlier reporting. Any donbt as to the urgency for prompt notification should be dispelled by the fact that in the majority of outbreaks the secondary cases are the result of action before the Authorities become aware of the existence of the disease. Where a practitioner, upon whose judgement an owner relies, meets with a doubtful case he should report forthwith rather than await the spread to contact animals to confirm his suspicions. Pending the arrival of a veterinary inspector of the Ministry he should arrange for separate attendance upon the suspected animals, which usually should be detained where he finds them, as it is preferable that the responsibility for any movement should be taken by a representative acting for the Central Authority. If, however, without involving animals not already exposed the suspected animals can be housed, this should be done ; the importance of personal disinfection must not be overlooked ; and where cows are under suspicion, the milk should not be allowed to be removed from the premises until the diagnosis is determined definitely.

Stamping-Out Policy.

On confirmation of the existence of the disease, one of two courses is open to the Authorities ; the outbreak may be dealt with by stamping-out measures, or by isolation. The former means the destruction of virus alraady present and the prevention of further virus production by slaughter of affected animals and contacts ; the latter that affected animals are left to recover or die. The policy of slaughter has been justified repeatedly in this country and abroad, and the nature of the disease suggests that it is not likely to be supplanted by a more effective one ; though it cannot be adopted in a country where the disease is widespread ; there the alternative policy of isolation is enforced upon the Authorities.

Whether one or the other policy is adopted, it must be accompanied by prohibition of movement of susceptible animals, and the practice in this country has been to schedule an area of about 15 miles radius from the infected premises. It has sometimes been said that the area is so large that it causes inconvenience and hardship which are unnecessary, but at the time of the imposition of the restrictions there is usually an incomplete knowledge of the facts concerning the outbreak ; whether it is the primary outbreak, or whether disease has been introduced from a previously existing one of which no intimation has yet come to hand. The investigation of a reported case some months ago proved it to be the 5th of a series, the cases being traced back in sequence to the original unreported source 13 miles away. Hence the necessity for an area sufficiently large to cover possible undisclosed outbreaks, and to immobilise any animals which may have been removed from the infected premises or their vicinity when the disease was in its incubation, or in an active stage. The slaughter policy aims at the extinction of disease centres in the shortest possible time, and consequently the absolute prohibition of movement can be modified earlier than would be the case if a policy of isolation were in force. Until conditions are modified the movement of animals on public roads is forbidden, thus closing markets and exhibitions. General exemptions cannot be granted, for the object of the restrictions would thereby be defeated, but cases of hardship—such as illness or shortage of keep, or floods, can be met with by a specially authorised movement. In the vicinity of infected places where animals may be in the early stages of incubation, or where infected animals have been driven on public highways, movement can only be authorised as a last resort ; other measures being sought to relieve the particular form of hardship complained of.

On the infected place, slaugher of affected and contact animals must be undertaken without delay under veterinary supervision ; affected animals and carcases otherwise unsalvageable to be buried, or, preferably cremated ; salvageable carcases to be suitably dressed for human consumption ; the disinfection of persons employed on the premises—valuers, butchers, labourers, who should be be provided with suitable over-all clothing, must receive close attention. Meanwhile the floors and walls of buildings or shelters, soiled fodder and litter and other infected material should be repeateadly sprayed with disinfectant ; it is as important to destroy the virus already existent as to prevent its increase by the slaughter of animals. A convenient manner of dealing with the entrance to the premises is to put down a bed of straw sprinkled frequently with disinfectant.

Animals in the immediate vicinity which have been exposed to infection on account of open fences, or common drinking places, and consequently are expected to develop the disease, should be slaughtered, particularly when they threaten the safety of other stock. Apart from the general prohibition of movement on roads animals near an infected place must not be permitted to be moved indiscriminately from field to field, but the position should always be viewed at the earliest stage of an outbreak in order to secure the segregation of different lots of animais by making use of the features of the country—as woods, arable land, vaaant fields, a railway line, etc., which by the absence of animals would cause a break in the progress of the disease.

In some cases it is not possible to move animals with safety, on account of the land being heavily stocked, and it is wiser to slaughter contacts in contiguous fields to prevent a chain of centres which might culminate in an extensive outbreak. In others it is possible to secure segregation by erecting a single strand wire fence about 30 to 40 yards from the boundary, though where sheep are involved, netting must be put up.

Where animals have been removed from infected premises after exposure to infection, it is sometimes advisable to return them to the place of origin for immediate slaughter, especially if there are others which may thereby be saved ; in other cases isolation should be adopted. The short period of incubation prevents action of this kind being successful in frequent cases, and in addition the contacts, besides acting as distributors of infection when the virus multiplies in the blood stream, are usually mechanical carriers, and may shed infection before they are diseased in a pathological sense.

As regards contacts, any measure should be adopted which promises a reasonable chance of protecting them from infection, whether by fencing back, or by removal to an isolated pasture, or dividing a large number into smaller lots—more especially when the value of the animals in question is large—rather than indiscriminately to slaughter them on the ground that they may have been already infected. It inspires confidence among farmers, and encourages them to assist the Authorities when they realise that as few animals as possible are

slaughtered ; and on a large farm, the sooner disease is reported the greater is the proportion of the stock which is likely to be saved.

In a recent case, disease was found to exist in a crewe yard 5 days after the arrival of the affected animals ; a cowshed formed one of the sides of the yard, the manur- of the cows being pitched into the yard throguh two windows. In view of the fact that no other direct means of access from the one place to the other existed, and that a separate attendant fed the bullocks in the yard, it was decided not to slaughter the cows but to await developments, in spite of the risk to which they had been exposed by indirect means. The disease did not spread to them, and the owner was able to continue his milk business without dislocation, although the slaughter of those cows could not have been regarded as an unreasonable measure. Valuable sheep drawn from an infected flock and isolated have also been saved.

Those are the lines on which the disease has been repeatedly extinguished in the past, and it is hoped that circumstances will always allow it to be dealt with similarly in the future. It is that policy which provides most rapid eradication whilst causing least inconvenience, and removes the fear that the outbreaks may have left a legacy of unidentifiable carriers to perpetuate the disease.

Isolation.

The stamping-out policy, however, has its limitations, and it must be abandoned for another when the disease has not been reported until it has become firmly established in a thickly stocked district, and is likely to radiate afield before it can be overtaken by slaughter of animals ; or when the disease arising from unknown sources and distributed by unkown means occurs in multiple centres.

Then the policy of isolation must be substituted for that of slaughter. Relatively smaller circles of prohibition of movement may be selected, but the restrictions would have to be in force for a longer period, and the areas would probably be more numerous, though it might be desirable to schedule extensive areas if Local Authothorities framed measures to protect themselves independently of the protection afforded by measures taken by the Central Authority.

Whilst a policy of isolation is in force the number of outbreaks is of less consideration than their location ; it would be expected that the disease would spread to animals in contiguous pastures until a substantial barrier arrested its progress. It does not follow because isolation is practised in one place, it should be adopted generally ; in other parts of the country no opportunities of adopting the slaughtering policy should be neglected, so that the minimum inconvenience be inflicted upon the agricultural industry. When it is judged that the disease has practically run its course in an infected area, the slaughter policy could advantageously be resumed in order to hasten the end.

The problems which have to be solved when isolation is adopted are :—First to prevent the undue spread of disease ; and second, to promote its early eradication. It is the practice in some countries deliberately to expose healthy animals to infection so that the disease, usually fatal to a small extent only, runs its course in the shortest possible time, and so obtains earlier relief from restrictions, rather than to be faced with an outbreak lasting for months with the attendant inconveniences. The method has a good deal of merit, though it is doubtful whether its application in this country would be wise. I would recommend instead, that every measure be taken to protect from infection herds of milch cows, in order to avoid the serious loss of milk ; and young stock, so as to prevent a possible high mortality, and also pregnant animals to avert the risks of abortion. Deliberately to expose animals to infection would afford the organism an opportunity to intensify its virulence against victims which have little or no natural resistance against it, as so many generations have passed since the disease was rife that immunity has become lost. Frequently the disease in this country in original outbreaks assumes a mild form due, probably to adverse conditions in which the virus existed since leaving its former host, or to the period which has elapsed between that time and its opportunity in finding a susceptible animal, in consequence of which it has become attentuated ; but intensification of virulence has been observed on several occasions where a series of outbreaks has occurred, and it is likely that, given suitable conditions, the process would continue until a degree of virulence is reached which has not been experienced in this country for many years.

Immunisation.

Various methods of producing artificial immunity have been attempted but have not, so far, resulted in producing one suitable for application on a large scale in the field. Potent serum is yielded by animals which have passed through an attack of the disease, are subsequently hyper-immunised, though the protection conferred by it lasts for ten to fourteen days only, unless the animals which receive the serum contract infection during the period of their passive immunity, in which case the disease manifests itself in a very mild form, usually with no worse effect than a rise in temperature. A reliable serum might prove of value in dealing with an extensive outbreak by ring-fencing the infected centre by injection with serum of the surrounding herds and flocks, and also by the treatment of isolated groups in the centre which have escaped infection. In order to avoid the necessity for further treatment at the end of 10 days or so, the treated animals should be exposed to contagion immediately after treatment, preferably by movement towards the centre rather than by carrying the infection outwards. The further advantage of vacant land, to check the spread of disease, would thereby be obtained, whilst at the same time restricting the infected area. Efforts have been made to produce a method of actively immunising animals by other means, including the use of sensitised virus ; but the results have not been satisfactory, indeed in some cases they have been disastrous—a high mortality among the treated animals having ensued.

Active immunisation by artificial means would bring about a great improvement on present day means of dealing with the disease provided that the method entails no loss of life, and that it is not accompanied by production of virus during the process of immunisation. These two conditions, probably co-related, are essential features in a method which should be without danger to stock undergoing the treatment, and which should not create a new source of infection in every case in which an animal is submitted to it. A method of this kind would be of use for protecting contacts in outbreaks irrespective of the primary means adopted to extinguish the disease. The use of a protective serum alone is not to be recommended as an adjunct to the policy of slaughter, for it seems likely to promote a sense of false security by obscuring extensions of outbreaks which, whilst abortive, may nevertheless, prove themselves to be fresh foci of infection ; nor while that policy is in force would it be logical to treat with serum contact animals, and then to expose them to infection, for, however slight or mild be the reaction, it involves the production of virus by every animal which reacts, and the possibility of "carriers" resulting from immunisation, whether accidental or deliberate, following on the use of serum must be reckoned with.

At the present time the production of serum is very costly, and will remain so until the virus can be obtained cheaply and readily in quantity, and this will not occur until it can be grown in an artificial medium. Its successful cultivation *in vitro* would provide the first step in the advance of our knowledge of a number of points which is at present meagre. Until we possess a more adequate knowledge of the circumstances in which the virus can maintain its existence outside the animal body, and of the conditions which are adverse or favourable to its prolonged existence, the means by which the disease is spread over considerable distances is likely to remain conjectural.

It was my intention, in the first place, to show you some of the difficulties with which we are confronted in dealing with F. and M. which, economically, is the most serious plague which we have to deal with in this country at present, and in the second place, to promote a discussion which may result in bringing forward suggestions which could throw light on some of the problems involved. It is hardly necessary to mention that such suggestions will receive the close attention of the proper authorities.

REFERENCES.

1. Hutyra and Marek—Special Pathology and Therapeutics of the Diseases of Domestic Animals.
2. Annual Report of Chief Veterinary Officer, Board of Agriculture and Fisheries, for the year 1912.
3. Board of Agriculture and Fisheries: Proceedings under Disease of Animals Acts, 1911.
4. Report of Bureau of Animal Industry, 1909.
5. Foods, by Wm. Tibbles.

NATIONAL VETERINARY MEDICAL ASSOCIATION

LANCASHIRE DIVISION.

A general meeting of the Lancashire V.M.A. was held at the Grand Hotel, Manchester on Tuesday, 21st September at 4 p.m.

The chair was taken by the President, A. W. Noel Pillers, Esq., and other members present were Messrs. J. W. Brittlebank, J. A. Ball, E. H. Stent, G. Mayall, H. G. Hewetson, J. Holroyd, J. H. Wright, J. McKinna, E. J. Burndred, G. H. Locke, E. H. Curbishley, F. Hopkin. W. A. Taylor, J. F. Dixon, and J. Spruell. Visitors—Messrs. R. Langford Lewis, C. W. Loy.

Apologies for absence were received from Messrs. Alex. Lawson, J. Adamson, Hy. Sumner and F. G. Edwards.

It was proposed by Mr. Locke, seconded by Mr. Wright, that the minutes of the last meeting be taken as read. (Carried).

Nominations. Mr. CHARLES WADSWORTH, of Oldham, nominated by Mr. G. H. Locke. Mr. J. R. RIGBY, Church Road, Lytham, by Mr. A. W. Noel Pillers.

New Member. Mr. R. H. ODDY, Manchester, was unanimously elected.

The PRESIDENT informed the meeting that the Council have had the rules of the Association revised and the amendments which have appeared in the minutes of previous meetings inserted. They are now ready for publishing and he asked the meeting to sanction the printing of them.

Mr. MAYALL proposed that the rules as submitted be printed, Mr. Taylor seconded. (Carried).

The SECRETARY read the circular from the Secretary of the N.V.M.A. about the 1921 meeting, at the Isle of Man.

The PRESIDENT said that it would be extremely difficult at this time for any Association to give even an approximate number of members who would be present at that meeting.

Mr. BRITTLEBANK stated that he had a conversation with Mr. Malcolm about this circular, and what was really intended was to notify the Associations that the meeting was going to be held in the Isle of Man. He suggested to the meeting that a letter be sent to the Secretary stating that it was impossible to say the number of members who would attend from the L.V.M.A., but that everything would be done by this Division to make the meeting a success.

Mr. CURBISHLEY proposed that a letter of sympathy be sent to Mr. Hy. Sumner on account of the illness of his wife. (Carried unanimously).

DISCUSSION ON PAPER BY MR. CURBISHLEY.

AUTO-INTOXICATION COMPLICATING SERIOUS GASTRO-INTESTINAL DISEASES.

Mr. STENT: I am very sorry indeed that Mr. Sumner is unable to open this discussion, to which I and many others were looking forward, as it is a subject to which he has paid much attention. I, unfortunately, was unable to be present when the paper was read, and owing to it being published only recently I have had little time to digest it, so I am not altogether *au fait* with Mr. Curbishley's ideas on the subject, but I hope that my few remarks will help along the discussion.

It is a most interesting subject, and I congratulate Mr. Curbishley on the careful and practical way he has brought it forward. Auto-intoxication has not received much attention from general practitioners in this country, probably owing to lack of research work. In America most of the States have experimental agricultural colleges, at which a highly trained Veterinary Pathologist conducts research experiments. It is a shame that the Government of this country is so short-sighted, or biased, as not to make grants for veterinary research; particularly when one realises the fact that the best blood of all domesticated animals is in these islands, and that other nations must come here to replenish their stocks. Auto-intoxication is undoubtedly the cause of much illness, which in the past was considered to be purely dietetic. We are all aware that many intestinal bacteria are harmless under normal conditions, but become pathogenic under conditions such as constipation, or injury to the bowel, so causing auto-intoxication or auto-infection. Whilst I was in the States this condition was causing great losses amongst dealers' horses; owing to the fact that these animals travelled in slow trains, and although they were supposed to be taken off and fed every 24 hours often twice that time elapsed between feeds. The United States' and British Government's animals were hayed in the cars, and had special trains, so their animals were not affected. Those dealers' horses and mules which did long railway journeys without food became very exhausted, and their power of resistance reduced to so low an ebb that auto-intoxication or auto-infection developed from bacilli of the para-typhoid type, which were found to be present in all cases.

The symptom were extreme weakness, diarrhoea, and death in 24 hours.

Probably Stuttgart disease in dogs may be of this type. Some dogs I believe to be carriers of this disease. This reminds me of the want of thorough disinfection of show benches—haphazard spraying with a tar smelling fluid is not proper and efficient disinfection. I much prefer a solution of chloride of lime.

I have always looked upon Lymphangitis as an auto-intoxication. There is no disease makes a valuable horse into a secondhand animal sooner than this complaint, yet because it is not fatal it is not much considered.

Most diseases originating in the bowels, such as Laminitis, Enteritis and probably Rheumatism, may be looked upon as due to auto-intoxication or auto-infection.

There is a large field for future research to obtain a curative vaccine or serum for these diseases, which are either fatal, or produce such serious changes as to seriously damage the value of the animal affected.

Mr. MAYALL: The President has kindly asked me to continue the discussion. I do not know that I am the best qualified man to do so. I think that we ought to be very grateful to Mr. Curbishley for bringing this subject before us. I think it was a very thoughtful paper. There are men in our profession, I am sorry to say, who boast that they never read. I have no sympathy at all with men of this description. They live for themselves alone, and add little or nothing to the advancement of the profession.

The cases mentioned by Mr. Curbishley are not often seen, but I am sure that they do occur. I can never remember making a post-mortem on a horse that had died of shock. Colic cases are growing less, due to more judicious feeding. I must congratulate Mr. Curbishley on the good manner in which his paper was given.

Mr. WRIGHT: I would like to thank Mr. Curbishley for the great paper which has no doubt taken a great deal of time to compile. I would like to ask him one question. How does he connect auto-intoxication with shock? I cannot myself see any connection. I am sure that this paper is not one that you can discuss in five minutes and I think for those who were not present we have not had time to go into the matter fully.

Mr. STENT said that animals do die of shock. In the United States a great amount of serum for Swine Fever is made in the year. Some of the immunised pigs are often bled, occasionally a pig dies from shock after only a small quantity of blood has been taken away. To prevent this the authorities now recommend that an intermuscular injection of camphor be given prior to drawing the blood.

Mr. TAYLOR said I cannot allow the opportunity to pass without rising to thank Mr. Curbishley for his paper. Gentlemen, it was more than a paper—it was an oration, to which we all listened with great attention, and I congratulate him for bringing this most interesting subject before this association. I advise those gentlemen who have not read the paper to do so.

REPLY.

Mr. CURBISHLEY: Mr. President and gentlemen. The remarks that have been made this afternoon, while they seem to have wandered a little from the subject of my paper, have been very interesting. What I wanted to be discussed was simply shock complicating these serious intestinal diseases. When shock does occur, the abdominal pain ceases, and I treat it simply as shock.

With regard to Mr. Stent's remarks on auto-intoxication occurring in horses and mules after railway journeys, it may certainly be associated with the same condition. Railway travelling is likely to give rise to something of this kind. The war experience of a number of our members will have been valuable in that respect, and they will have seen it. Whilst this auto-intoxication does not give rise to any gastric symptoms, they may easily orignate in the digestive organs.

Mr. Wright thinks that there is no connection between auto-intoxication and shock. In his latest publication, Merrilat says auto-intoxication is shock, *i.e.*, it is shock under certain conditions, and auto-intoxication and shock are one and the same thing. It is quite likely that a horse may become exhausted, but at the same time it would take a horse a long time to dic from exhaustion alone.

Mr. NOEL-PILLERS said that there is no doubt that Mr. Curbishley's paper has been greatly appreciated by a great number of the profession outside of this association as well as by members of the association. Looking on the paper as an ordinary veterinary surgeon I must say that it is really an advance, and it shows that we are coming up to the standard which other countries seem to have obtained some years ago. I am sure it is your wish that I should tender to Mr. Curbishley your heartiest thanks for the excellent paper, which we have all so thoroughly enjoyed.

Mr. CURBISHLEY said, I think that this last part of the programme might have been left out. I am sure it has been nothing less than a pleasure to come forward and give the paper. I simply did it as a matter of duty. I received an urgent S.O.S. asking me if I could do something and this effort is the result.

SPECIMENS AND CASES

The PRESIDENT submitted a large Renal Calculus taken from the kidney of a horse. He also submitted a horse's heart showing calcification of the walls of the right auricle.

Mr. MAYALL submitted three specimens of larvæ. i. The larvæ of *Aestrus Equi*, the horse bot. ii. The rat-tailed larvæ of the drone fly *eriftalistenax*. These larvæ were passed rather plentifully in the faeces of a pig. Probably the pig took them up as eggs deposited by the drone fly on decaying fruit (wind-falls) in an orchard, or from stagnant manure water. iii. *Cysticercus pisiformis* which is the larval stage of the taenia serrata of the dog. These cysts were found in great quantity free in the peritoneal cavity of a rabbit. Rabbits and hares are infected by eating vegetation contaminated by the faeces of dogs. A dog may become infected by the ingestion of the cysts 8–10 days after dessication. The cycle is complete in eight weeks, when the dog will be passing ripe segments and ova, according to Smythe's Veterinary Parasitology.

Mr. STENT submitted the acetabulum and head of femur of a cart horse, showing a deep notch in the neck of the femur, cut out by the brim of the acetabulum, the latter was worn down also. This horse had been worked daily for over a year evidently with the hip-joint partially dislocated. There was no apparent lameness, except that the horse showed a little stiffness on Monday mornings. During a carters strike the horse was turned out to grass, while galloping about and throwing up its heels it suddenly stopped, and stood on three legs. On post-mortem the round and capsular ligaments were found to be in shreds. The remarkable thing is that this animal was able to work with a partially dislocated hip-joint. I also wish to point out that its usefulness was cut short by being turned out to grass, and the possibility overlooked of the horse damaging itself by lunging out, which most horses do when liberated.

The PRESIDENT submitted a report on the meeting of N.V.M.A. at Edinburgh. He also drew the attention of the members to the Lancashire Fund on behalf of the R.C.V.S. War Memorial Fund, and informed them that the Treasurer was prepared to receive subscriptions or promises to subscribe at this meeting.

Mr. McKINNA in support of this fund said. I am very much interested in this matter. The Yorkshire Division had very willingly contributed to this fund, and I appeal to the members of this Division to support the fund in the same manner as they had supported the proposal. The object of a library in London is really to bring this profession on a level with other professions. I feel sure that the profession will be repaid many times over if we can get sufficient funds to establish a reference library; but it could not be done without funds. I appeal to the members to show their respect for those who had fallen in the Great War, by supporting this fund and thus helping to establish a lasting and useful memorial.

Mr. TAYLOR proposed a vote of thanks to the President for the able manner in which he had conducted the meeting.

JOHN SPRUELL, Hon. Sec.

WAR MEMORIAL FUND.

To the Editor of The Veterinary Record

Sir,—We should be grateful if you would allow space in *The Veterinary Record* to call the attention of the profession once more to the War Memorial Fund. In answer to the appeal issued last Spring, a sum of £760 has been received to date, but this has been contributed by no more than 188 members.

We feel sure that the smallness of the number of subscribers is no indication of the number of members who regard the project with sympathy. Doubtless there are many who have delayed, not fully realising the desirability of an early response. Others perhaps have felt that any contribution they might be able to afford would be so small comparatively as to be of little help.

During the war no profession had a better record than the veterinary profession. Over 40 per cent. of the members served in one capacity or other in the R.A.V.C. Great sacrifices were made by those who left their practices, and no fewer than 67 members of the College gave their lives in the service of their country.

When the Council of the College decided, in common with other professions, to institute a Memorial to commemorate this great sacrifice, there were two main principles kept in view. First that, though it was fitting that at the head-quarters of the profession there should be erected a memorial tablet bearing the names of those who had lost their lives on active service, this memorial should not be elaborate or costly, but simple and inexpensive. Secondly, that the balance of the money collected, after paying for the mural tablet should be set apart for the improvement, extension and endowment of the Library, to be designated The War Memorial Library, with a reading room accessible at all times to the members of the profession. Arrangements will as far as possible be made also for books and periodicals to be had on loan. The Library will thus become a benefit not only to the present members but also to succeeding generations.

Estimates and designs for the Mural Tablet have been considered and the design of Messrs. Harrods has finally been accepted by the Council at a cost of £155. It is a tablet in oak, the inscription and arms carved in relief, and the names incised.

Steps are being taken, by a rearrangement of rooms to instal the Library in such a way as to leave room for expansion, and this will for the present avoid any expenditure of funds on building. The extent to which the Library can be improved depends entirely upon the amount of money available. A much larger sum than that already recieved can be utilised with advantage to the profession, and an earnest appeal is issued to those members of the profession who have not subscribed to send their contributions, however small, as soon as possible in order that the scheme may be proceeded with. If members who did not go to the war sent a subscription as a thank-offering for the safe return of a son or a brother from the front, there would be nearly a thousand additional subscribers. If those who went out and returned safely sent a subscription to mark their sense of comradeship with those who lost their lives, another thousand additional subscriptions would be received. In this way the War Memorial Fund could be said to be truly a memorial worthy of the profession.

Subscriptions should be made payable to the R.C.V.S. War Memorial Fund, and sent to the Secretary.

O. Charnock Bradley, President.
W. J. Mulvey, Treasurer.
Fred. Bullock, Secretary.

THE HUNTING TRUST, V.V.B. FUND.

To the Editor of The Veterinary Record.

Sir,—Although the Hunting Memorial Fund is closed and my responsibility as Honorary Secretary and Treasurer terminated, I would like to make an appeal to all those members of the profession who did not subscribe to it to subscribe to the Hunting Trust, which now, so I am informed, will only bring in an income of some £18, a very small sum indeed.

The subscriptions should be sent to Mr. Fred. Bullock, Secretary of the Victoria Veterinary Benevolent Fund, Royal College of Veterinary Surgeons, 10 Red Lion Square, W.C., 1, who would, when a sufficient sum had been obtained, purchase fresh stock and add it to the Hunting Trust. If another £150 were to be subscribed it would bring the Fund up to about £500 with an annual income of £20.

The profession could not better commemorate the name of William Hunting than by increasing the amount of the Trust which will benefit his two children during their life-time, and after their demise those who are in actual need of assistance.

When the fund was started seven years ago it was anticipated by some well-wishers that it would ultimately amount to over four figures, but the prolonged war spoilt all hopes of that sum being realised.—I am, dear Sir, Yours faithfully,

Nov. 4th. Henry Gray.

PUBLICITY COMMITTEE.

Sir—In common with six members of Council, I see by your remarks Mr. Editor, that you approve of "Publicity," and although your journal is not lay, such "casting your bread upon the waters" should have good effect. You very justly say, "can it be denied that it is useless to blame the public for indifference to matters of which they are ignorant?"—this is the crux of the whole matter. Your correspondent M.R.C.V.S., approves of Mr. Male's plan and also that of Sir John McFadyean; but he misquotes the latter; Sir John said that the *only* way to induce the public to value us was by raising the standard of education; surely in these days of want (put it in this low standard if you like) it is putting the cart before the horse. Is nothing to be said of the vast educational strides made by the profession in the last 25 years? We don't want another 25 years to elapse before the public is made aware of our existence; and is it not a disappointment to those members of the profession—and there are many who have taken advantage of the higher education, that an ignorant public knows nothing of their worth? The ideal of scientific knowledge cannot be too high; it is always above us; but while the (scientific) grass is growing, the (actual) stud is starving. We have no cause to put our candle under a bushel, for many practical instances of the past have saved individuals, and even the state from disaster. I agree with M.R.C.V.S., as to the power of the Press, and what it might do to our advantage by judicious propaganda carried out by a Publicity Committee.—Yours,

Blackheath, Nov. 1. "Back-Seater."

Sir—I was much interested in your editorial remarks with reference to a Publicity Committee.

On the same page you very rightly draw attention to the remarkable fact that there has only been one case of glanders reported in the United Kingdom during the last 29 weeks—and this after the Great War, when one would expect a great increase in such diseases. It speaks volumes for the efficient work of the R.A.V.C. and the veterinary profession generally.

At the Council Meeting, Sir J. M'Fadyean remarked that "the immense majority, of the public, take no interest" in veterinary matters: and Mr. Garnett was very fearful that there might be a divergence of views on the committee. These facts as to the suppression of glanders, if properly stated in the agricultural and lay press should be of great interest to the community, and would show that the profession is doing solid conscientious work for the public good. There could be no question of policy or difference of opinion in recording them. This is but one of many examples that could be given of propaganda.

If a similar success had attended the efforts of the medical profession we should be reading it in big headlines everywhere.

It is easy to talk platitudes and advocate the better education of the members, to that we all subscribe; but what encouragement is there for any well educated gentleman to join a profession which has been persistently ignored by the State, and whose sphere of work is so little understood that we are considered to be in competition with gelders and farriers. (*Vide* House of Commons Debates on the Amendment Bill.)

We wonder why our services are not utilised more by public bodies, why more veterinary surgeons are not employed as meat inspectors and in other ways. The answer is that the general public do not even know we are educated and trained to fill such posts.

We could get support, sympathy, and respect had we intelligence enough to utilise the means at our disposal. A Publicity Committee will not hinder the better education of the profession, but will tend to attract good men into it when they see we are alive to our interests, and the importance of the work we are doing—and can do, for the public welfare.—Yours faithfully,

Reading, Nov. 2. G. P. MALE.

Sir,—I hope Mr. Male's proposal will receive cousideration from the profession. I think it is worth it. If we prefer to remain in "splendid isolation," and do not take the trouble to educate the public with regard to veterinary matters which concern them, it is certain they will not seek that information themselves. The profession consequently suffers. In these days of fictitious values it behoves us as a profession to make known to the public by publicity, judicious and opportune, our just claims to serve them, and our real value to the State.

Not unfrequently during the war a veterinary officer was asked the question: "What were you before the war?

It is surprising how little the general public knows about veterinary surgeons and their work. During the recent debate in Parliament on the Veterinary Surgeons Act Amendment Bill I myself was astonished at the ignorance of most of the speakers. The ignorance of the public must be lamentable. I think something ought to be done in the matter.—Yours faithfully,

Towcester. W. E. BLACKWELL.

About "Publicity."

Sir—I have read the note in your editorial colums of the current issue, and agree with most of what is there said. As an evidence of the need for some control in such publication, I am enclosing a copy of a notice which is, I think, an example of how it *should not* be done. It is several years old, and I have not given the member's name, as I don't intend it for personal remark. As an old reader of your journal, I have a recollection of a similar (and earlier) note from another source on a dog which was fitted with a wooden leg.

COM. SOUTHON.

Dog's Artificial Eye.

A patient at Ruislip Dog Sanatorium, a little King Charles spaniel, has just been provided with an artificial eye. The spaniel had had a battle with a cat and came off bady in the encounter, for she lacerated his eye so terribly that it had to be removed.

Mr. —— ——, M.R.C.V.S., who is in charge of the sanatorium, had the eye removed under an anæsthetic and a glass eye inserted. He had a little trouble in making a match, but eventually he succeeded in getting a fine brown eye, the very counterpart of the natural one, and no one would suspect that it was not real.

There are many canine and feline patients at the Ruislip Sanatorium. In the surgery many operations are conducted. A cat recently had her fractured leg set. Here, limbs of canine and feline patients are amputated when there is no hope of saving them. Recently a little dog who had been run over by a motor-omnibus had two toes cut off, but now he is quite well and running about as lively as ever.

At the sanatorium there is a special dog's bath-room and an isolation ward for infectious cases.—*Tit Bits.*

Sodium Persulphate for Tetanus

A solution of sodium persulphate administered by intravenous injection was employed in the American Hospital in Paris; in cases treated there by other methods the mortality from tetanus was 75 per cent., while the three patients on whom this method was employed recovered. Details are given by Dr. L. Leyva in *Surgery, Gynecology, and Obstetrics.* One of the cases was severe, the other two comparatively mild. A 5 per cent. solution of sodium persulphate is freshly prepared, and kept in a cool and dark place (it is decomposed by both light and heat). Dr. Leyva gives at least 60 c.cm. of the solution each day, preferably in two or more intravenous injections. The fluid is introduced slowly, the injection taking some five minutes. A reaction often appears, but the relief is so great that the patient sometimes asks for a repetition of the injection. In each of the three cases antitetanic serum was employed as well as the persulphate. Cases of tetanus may recover without treatment, but the improvement seemed in these cases to coincide with the administration of the persulphate. *The Lancet.*

U.S. DIRECTOR OF AGRICULTURE.

Mr. J. STEWART J. M'CALL, son of the late Principal M'Call, F.R.C.V.S., of the Glasgow Veterinary College, has been appointed by Lord Milner to the high office of Director of Agriculture, Tanganyika Territory (late German East Africa). During the war Mr. M'Call acted as Food Commissioner for the Nyasaland Protectorate, and had everything to do with the feeding of the army which took possession of what was German East Africa. The new territory committed to his care extends to 308,000 square miles, and it has a population of seven million blacks. The head of cattle carried is estimated at somewhere about five millions.—N.B.A.

[This note has appeared in several Scottish papers, but, so far as we know, not in any in the Midlands or South of England.]

Personal.

GIBBS.—On the 3rd September, at Quetta, to Yvonne, wife of Major H. E. Gibbs, D.S.O., R.A.V.C., a daughter, prematurely, who survived her birth only seven days.

STEEVENSON.—On the 30th Oct., at Bangalore, to Muriel Theodora (*née* Quiggin), wife of Major J. R. Steevenson, D.S.O., a son.